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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,461	12/28/2001	Bruce W. Rose	42390P12398	1048

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EXAMINER	
MILORD, MARCEAU	

ART UNIT	PAPER NUMBER
2682	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,461	ROSE ET AL.	
	Examiner	Art Unit	
	Marceau Milord	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 September 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) 2-5,7-10 and 12-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 2-5,7-10 and 12-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 July 2002 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject

matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2-5, 7-10, 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin (US Patent No 6658264 B1) in view of Hayes et al (US Patent No 6204819 B1).

Regarding claims 7, 2 and 4, Irwin discloses a portable communication device (figs. 1-3) comprising: a first transceiver (210 of fig. 2 or 372 of fig. 3); a second transceiver (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29); and a switch (324 of fig. 3) to couple the first transceiver to an antennae, wherein the first switch ha an input node directly connected to the antennae (col. 2, line 45- col. 3, line 11; col. 5, lines 18-29; col. 5, line 60- col. 6, line 47)

However, Irwin does not specifically disclose that the first switch is a micro-electromechanical system switch; and a field effect transistor switch coupled to an output of the first MEMS switch.

On the other hand, Hayes et al, from the same field of endeavor, discloses a multiple frequency band antennas having first and second conductive branches that are provided for use within wireless communications devices such as radiotelephones. The first micro-electrical switch is configured to selectively connect the first feed to either ground or to a receiver and/or transmitter that receives and/or transmits wireless communication signals. The second micro-electrical switch is configured to selectively connect the second feed to different receiver/transmitter (col. 2, line 21- col. 3, line 8; col. 4, lines 41- 67; col. 7, lines 30- 52). In

addition, the first and second switches are micro-electrical systems switches (col. 5, line 12-col. 6, line 33). Furthermore, Hayes shows in figures 5A-5B and 6A-6B, the first and second conductive branches 42, 46 are electrically connected such that the antenna 40 radiates as a loop antenna, the first switch S1 may connected to a first receiver/transmitter 48 (transceiver) that receives/transmits wireless communication signals in a first frequency band, the second switch may be connected to a different receiver/transmitter 48' that receives/transmits wireless communications signals in a second, different frequency band (figs. 5-6; col. 7, lines 29-52). In addition, the antenna 140 includes first and second conductive branches 142, 146, and the third switch is connected to the receiver/transmitter (transceiver; see figs. 8A-8B, col. 8, lines 22-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hayes to the communication system of Irwin in order to provide compact antennas that can radiate within multiple frequency bands for use within wireless communications devices.

Regarding claim 3, Irwin as modified discloses a portable communication device (figs. 1-3) comprising: a first transceiver (210 of fig. 2 or 372 of fig. 3); a second transceiver (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29), wherein the first transceiver and the second transceiver are adapted to communicate at about 1 .9 GHz, 1.8 GHz, or 900 MHz (col. 4, lines 38- 54; col. 6, lines 8- 38).

Regarding claims 8-9, Irwin as applied to claim7 above differs from claims 8-9 in the present invention, in that Irwin fails to disclose the first MEMS switch includes a cantilever adapted to move to a first position to couple the antennae to the first transceiver, wherein the cantilever of the first MEMS switch is adapted to move to a second position to disconnect the

antennae from the first transceiver, wherein the first MEMS switch has an input node directly connected to the antennae, wherein the field effect transistor switch and the first MEMS switch are contained within the same semiconductor substrate.

However, Hayes discloses a multiple frequency band antennas having first and second conductive branches that are provided for use within wireless communications devices such as radiotelephones. The first micro-electrical switch is configured to selectively connect the first feed to either ground or to a receiver and/or transmitter that receives and/or transmits wireless communication signals. The second micro-electrical switch is configured to selectively connect the second feed to different receiver/transmitter (col. 2, line 21- col. 3, line 8; col. 4, lines 41- 67; col. 7, lines 30- 52). In addition, the first and second switches are micro-electrical systems switches (col. 5, line 12-col. 6, line 33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hayes to the communication system of Irwin in order to provide compact antennas that can radiate within multiple frequency bands for use within wireless communications devices.

Regarding claim 10, Irwin discloses a portable communication device (figs. 1-3) comprising: an antennae (222 of fig. 2; it could be a plurality of antennas, col. 5, lines 20-25, or 374 of fig. 3, col. 6, lines 8-16); a first switch (324 of fig. 3) that is enabled with an electrical signal; a first transceiver (210 of fig. 2 or 372 of fig. 3); wherein the switch (324 of fig. 3) is adapted to coupled the first transceiver to the antennae; and a second transceiver (220 of fig. 2 or 344 of fig. 3), wherein the switch is adapted to coupled the second transceiver to the antennae (220 of fig. 2 or 344 of fig. 3; col. 4, line 18-col. 5, line 29)(col. 2, line 45- col. 3, line 11; col. 5, lines 18-29; col. 5, line 60- col. 6, line 47).

However, Irwin does not specifically disclose that the first switch is a micro-electromechanical system switch; and the second switch is a mechanical switch that is adapted to couple the second transceiver to the antennae, wherein the second mechanical switch that is enabled with an electrical signal; and a field effect transistor switch coupled to the first MEMS switch.

On the other hand, Hayes et al, from the same field of endeavor, discloses a multiple frequency band antennas having first and second conductive branches that are provided for use within wireless communications devices such as radiotelephones. The first micro-electrical switch is configured to selectively connect the first feed to either ground or to a receiver and/or transmitter that receives and/or transmits wireless communication signals. The second micro-electrical switch is configured to selectively connect the second feed to different receiver/transmitter (col. 2, line 21- col. 3, line 8; col. 4, lines 41- 67; col. 7, lines 30- 52). In addition, the first and second switches are micro-electrical systems switches (col. 5, line 12-col. 6, line 33). Furthermore, Hayes shows in figures 5A-5B and 6A-6B, the first and second conductive branches 42, 46 are electrically connected such that the antenna 40 radiates as a loop antenna, the first switch S1 may connected to a first receiver/transmitter 48 (transceiver) that receives/transmits wireless communication signals in a first frequency band, the second switch may be connected to a different receiver/transmitter 48' that receives/transmits wireless communications signals in a second, different frequency band (figs. 5-6; col. 7, lines 29-52). In addition, the antenna 140 includes first and second conductive branches 142, 146, and the third switch is connected to the receiver/transmitter (transceiver; see figs. 8A-8B, col. 8, lines 22-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to apply the technique of Hayes to the communication system of Irwin in order to provide compact antennas that can radiate within multiple frequency bands for use within wireless communications devices.

Regarding claims 12-15, Irwin as applied to claim10 above differs from claims 12-15 in the present invention, in that Irwin fails to disclose a first field effect transistor switch coupled to the first mechanical switch, wherein the first field effect transistor switch and the first mechanical switch are both formed in the same semiconductor substrate, a second base band module adapted to process signals at a second frequency, the second base band module coupled to the antennae when the second mechanical switch is enabled.

However, Hayes discloses a multiple frequency band antennas having first and second conductive branches that are provided for use within wireless communications devices such as radiotelephones. The first micro-electrical switch is configured to selectively connect the first feed to either ground or to a receiver and/or transmitter that receives and/or transmits wireless communication signals. The second micro-electrical switch is configured to selectively connect the second feed to different receiver/transmitter (col. 2, line 21- col. 3, line 8; col. 4, lines 41- 67; col. 7, lines 30- 52). In addition, the first and second switches are micro-electrical systems switches (col. 5, line 12-col. 6, line 33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hayes to the communication system of Irwin in order to provide compact antennas that can radiate within multiple frequency bands for use within wireless communications devices.

Regarding claim 16, Irwin as modified discloses a portable communication device (figs. 1-3), wherein the first frequency is at least twice the second frequency (col. 5, line 7- col. 6, line 47).

Regarding claim 17, Irwin as modified discloses a portable communication device (figs. 1-3), wherein the first frequency is about 1 .9 GHz (col. 4, lines 38- 54; col. 6, lines 8- 38).

Response to Arguments

4. Applicant's arguments filed on September 20, 2004 have been fully considered but they are not persuasive.

Applicant's representative argues, "there is no switch disclosed by Irwin which couples/decouples first and second transceivers".

However, Irwin shows in figure 3, two switches, where the positions of switches 324 and 334 are controlled by the controller 380 to determine whether the first transceiver 372 or the second transceiver 340 is used (col. 5, line60- col. 6, line 47). In addition, Irwin also shows in figure 2, the first transceiver and the second transceiver are both connected to an antenna 22. The first and the second transceiver can be connected to separate antennas (see fig. 2; col. 15-33).

Applicant's representative also argues that Hayes use MEMs switches for adopting conductive branches of a single inverted-F antenna for use of multiple frequency bands.

However, Hayes shows in figures 5A-5B and 6A-6B, the first and second conductive branches 42, 46 are electrically connected such that the antenna 40 radiates as a loop antenna, the first switch S1 may connected to a first receiver/transmitter 48 (transceiver) that receives/transmits wireless communication signals in a first frequency band, the second switch

may be connected to a different receiver/transmitter 48' that receives/transmits wireless communications signals in a second, different frequency band (figs. 5-6; col. 7, lines 29-52). In addition, the antenna 140 includes first and second conductive branches 142, 146, and the third switch is connected to the receiver/transmitter (transceiver; see figs. 8A-8B, col. 8, lines 22-48).

The Examines still believes these references were used to disclose such features as they were applied in the above rejection.

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

Marceau Milord

Examiner

Art Unit 2682

M Milord
MARCEAU MILORD
PRIMARY EXAMINER

1-21-05